MISSILE DEFENSE AGENCY
MDA In-depth
Making Ballistic Missile Defense A Reality...

# Test And Evaluation

## Introduction

The Ballistic Missile Defense (BMD) test philosophy recognizes the need for an integrated, phased test program that comprehensively covers all facets of testing. Testing components, subsystems and systems, especially early in the developmental cycle, can determine current performance capabilities and identify potential design areas where technology can increase overall system capability. Later testing demonstrates and measures the effectiveness and suitability of missile defense systems in their intended operational environments.

The BMD System (BMDS) test methodology adds system complexities over time. For example, system performance in the presence of countermeasures and operations in increasingly stressful combat scenarios would be addressed in segmental tests. This step-by-step approach facilitates timely assessments of the most critical design risk areas.

The Deputy for Test and Assessment (TE) is responsible for test and assessment policy development and implementation, as well as for overall planning, programming, budgeting, and execution of BMDS-level testing. This includes the development of the required test infrastructure to support testing at all levels.

The MDA test and assessment program supports credible decisions with respect to the BMDS and its elements. Specific program objectives focus on: characterizing, demonstrating, measuring and verifying achievement of BMDS capabilities; executing BMDS test events; facilitating credible testing of BMDS Elements, technology experiments and international collaborative programs; and anchoring Modeling and Simulation with test data for use in measuring performance throughout the test envelope.

## Description

Meeting the challenges of BMD testing requires an extensive test infrastructure. Collectively, TE's ground-test facilities, ranges, sensors and instrumentation assets provide valuable BMD program-wide risk reduction and test capability to assess BMD system and element performance. Ground tests are conducted at high-speed sled tracks, hardware-in-the-loop facilities, aero-ballistic ranges, aero-optic and aero-thermal shock tunnels and space chambers. The Joint National Integration Center (JNIC) provides a center of excellence for joint missile defense interoperability testing, war gaming, exercises, simulation, modeling, and analysis. TE deploys mobile airborne sensors to ranges during flight tests, which have onboard signal and data processing and collection capabilities. More recently this includes the development of transportable instrumentation and common standards to support MDA testing with flexible scenarios at a variety of locations. Core supporting ranges include both short- and long-range facilities with multiple launch sites. To ensure

## *Description Cont.*

targets for actual intercept tests stress the system to meet test objectives, TE identifies target requirements and later certifies adequacy of the as-built target for testing.

TE's Facilities Siting and Environmental (FS&E) Program provides real property acquisition and environmental support to BMD elements, technology development and BMD test activities. FS&E functions include: management of real property acquisition; planning, programming and budgeting for MDA military construction; ensuring facilities are acquired in compliance with federal laws; managing and complying with environmental policy, and: facilitating MDA compliance with environmental, safety, and occupational health laws.

TE conducts BMDS Integrated Tests using selected hardware and software from the individual elements to investigate performance, joint operations and interoperability. These tests include the Critical Measurements Programs and the System Integration Tests. The former are live test flights that provide common data collection opportunities and the latter are live intercept tests involving representations of potential future threats. Results of all tests are used to conduct annual system- wide capability assessments.

*Missile Defense Agency*
*7100 Defense Pentagon*
*Washington, D.C. 20301-7100*

*http://www.acq.osd.mil/bmdo/bmdolink/html/*

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